

PATENT COOPERATION TREATY

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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PCT

NOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY EXAMINATION
REPORT

(PCT Rule 71.1)

Date of mailing
day/month/year

5 JAN 2005

Applicant's or agent's file reference
12322720/EJH/ar

IMPORTANT NOTIFICATION

International Application No.
PCT/AU2003/001111

International Filing Date
29 August 2003

Priority Date
30 August 2002

Applicant

INTERNATIONAL FLOWER DEVELOPMENTS PTY. LTD et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translations to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide

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PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 12322720/EJH/ar	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).	
International Application No. PCT/AU2003/001111	International Filing Date (day/month/year) 29 August 2003	Priority Date (day/month/year) 30 August 2002
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ C12N 15/53		
Applicant INTERNATIONAL FLOWER DEVELOPMENTS PTY. LTD et al.		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.																
2.	This REPORT consists of a total of 4 sheets, including this cover sheet. <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of 4 sheet(s).																
3.	This report contains indications relating to the following items: <table style="width: 100%; border: none;"> <tr> <td style="width: 5%; text-align: right;">I</td> <td><input checked="" type="checkbox"/> Basis of the report</td> </tr> <tr> <td style="text-align: right;">II</td> <td><input type="checkbox"/> Priority</td> </tr> <tr> <td style="text-align: right;">III</td> <td><input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: right;">IV</td> <td><input type="checkbox"/> Lack of unity of invention</td> </tr> <tr> <td style="text-align: right;">V</td> <td><input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: right;">VI</td> <td><input type="checkbox"/> Certain documents cited</td> </tr> <tr> <td style="text-align: right;">VII</td> <td><input type="checkbox"/> Certain defects in the international application</td> </tr> <tr> <td style="text-align: right;">VIII</td> <td><input type="checkbox"/> Certain observations on the international application</td> </tr> </table>	I	<input checked="" type="checkbox"/> Basis of the report	II	<input type="checkbox"/> Priority	III	<input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	IV	<input type="checkbox"/> Lack of unity of invention	V	<input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	VI	<input type="checkbox"/> Certain documents cited	VII	<input type="checkbox"/> Certain defects in the international application	VIII	<input type="checkbox"/> Certain observations on the international application
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Date of submission of the demand 15 March 2004	Date of completion of the report 20 December 2004
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer JAMIE TURNER Telephone No. (02) 6283 2071

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU2003/001111

I. Basis of the report**1. With regard to the elements of the international application:***

- ☐ the international application as originally filed.
- ☒ the description, pages 1-133, as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☒ the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages 134-137, received on 30 September 2004 with the letter of 30 September 2004
- ☒ the drawings, pages 1/53-53/53, as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☒ the sequence listing part of the description:
pages 1-50, as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☒ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☒ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under Item 1 and annexed to this report

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU2003/001111

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims 23-24	YES
	Claims 1-22, 25-27	NO
Inventive step (IS)	Claims 23-24	YES
	Claims 1-22, 25-27	NO
Industrial applicability (IA)	Claims 1-27	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

The following citations, first raised in the corresponding International Search Report, are referred to as follows:

D1 - EP 0 632 128
D2 - EP 0 522 880
D3 - WO 2000009720
D4 - WO 1996036716
D5 - WO 1993020206

The invention the subject of the international application resides in nucleic acid molecules (chosen from SEQ ID NO: 9, 11, 13, 15, 17, 26 and 31) encoding a flavonoid 3', 5' hydroxylase (F3'5'H), or nucleic acid molecules which encode polypeptides (chosen from SEQ ID NO: 10, 12, 14, 16, 18, 27 and 32) having F3'5'H activity, wherein expression of said nucleic acid molecule in a rose petal tissue results in detectable levels of delphinidin or delphinidin-based molecules as measured by a chromatographic technique. The invention further resides, *inter alia*, in a construct comprising a promoter linked to said molecule, in a method for producing a transgenic plant comprising stably transforming a cell with said nucleic acid molecule and in a genetically modified plant comprising said nucleic acid molecule. The invention also resides in nucleic acid molecules shown in SEQ ID NO: 5 and 30.

D1 discloses F3'5'H gene from petunia petals as well as a transformed plant containing this gene. The transformed plant has bluer flowers or fruit than the corresponding wild type. The sequence shown at SEQ ID NO: 1 shares 68% identity with SEQ ID NO: 12, 66% identity with SEQ ID NO: 14, 65% identity with SEQ ID NO: 16 and 58% identity with SEQ ID NO: 21 of the international application.

Similarly, D2 discloses a petunia F3'5'H gene and plants transformed with said gene. The sequence shown at Figure 9 shares 65% identity with SEQ ID NO: 16 and the sequence shown at Figure 10 shares 69% identity with SEQ ID NO: 12, 66% identity with SEQ ID NO: 14, 58% identity with SEQ ID NO: 21, 73% identity with SEQ ID NO: 27 and 64% identity with SEQ ID NO: 32 of the international application.

D3 relates, *inter alia*, to petunia F3'5'H genes and to plants transformed with said genes. None of the gene sequences disclosed appears to be highly relevant to the gene sequences defined by the claims of the international application.

D4 relates, *inter alia*, to a plant transformed with a construct comprising a F3'5'H gene and a DFR gene resulting in altered flower color. As with D3, none of the sequences disclosed has a high degree of similarity with those claimed in the international application.

Continued in Supplemental Box

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU2003/001111

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of V

D5 relates, *inter alia*, to petunia F3'5'H and to plants transformed with said gene. The gene sequence shown at Figure 3 shares 68% identity with SEQ ID NO: 12, 67% identity with SEQ ID NO: 14, 65% identity with SEQ ID NO: 16, 58% identity with SEQ ID NO: 21, 72% identity with SEQ ID NO: 27 and 63% identity with SEQ ID NO: 32 of the international application.

While none of the cited art explicitly discloses "rose petal tissue (having) detectable levels of *delphinidin* or *delphinidin* based molecules as measured by a chromatographic technique", it is apparent that this feature is an inherent one; that is, if a F3'5'H transformed rose petal was bluer than the wild-type, said rose petal would inherently fulfil the requirements of this feature. Hence, this feature does not contribute novelty over a prior document which discloses a transformed plant petal which is bluer than the wild-type.

In the light of the disclosures of the above prior art, the invention of the international application can be regarded as the provision of the particular gene sequences, derived from *Viola*, *Salvia*, *Sollya*, *Lavandula* and *Kennedia*, in order to transform the host plant to produce rose petals having a detectable level of *delphinidin* or *delphinidin*-based molecules.

Clearly, however, the identification and purification of a F3'5'H gene from another, analogous species cannot be regarded as inventive. That is, the skilled person would find the identification of F3'5'H from *Viola*, say, no more than a matter of routine when starting from the position provided by documents D1-D5 above. In fact, D2 provides explicit instructions with regard to the detection of F3'5'H genes in other plants at page 21, line 48 to page 22, line 2. Further, D5 explicitly describes, at page 34, line 30 to page 36, line 25, a method of screening a variety of plant species for sequences homologous to petunia F3'5'H.

Hence, documents D1-D5 are considered prejudicial to the novelty and inventive step of claims 1-22 and 25-27.

It should be noted that none of the cited art disclosed a sequence with a high degree of similarity to SEQ ID NO: 5 or 30; hence claims 23-24 can be considered novel and inventive.

DAVIES COLLISON CAVE
PATENT & TRADE MARK ATTORNEYS



30 September, 2004

The Commissioner of Patents
WODEN ACT 2606

Acting as the International Preliminary Examining Authority

Our Ref: 12322720/EJH/ar

Re: International Flower Developments Pty. Ltd.
International Patent Application No. PCT/AU03/01111
"Flavonoid 3',5' Hydroxylase gene sequences and uses therefor"

Sir

In response to the Written Opinion dated 19 May 2004, we *enclose* herewith the following:

1. Substitute set of claims.

We respectfully seek leave of the International Preliminary Examining Authority to enter the amended set of claims.

Yours respectfully

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